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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KOPPIKAR, VIVEK D

ART UNIT

PAPER NUMBER

1733

4

DATE MAILED: 05/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/777,942

Applicant(s)

BALDWIN, JACK WILBUR

Examiner

Vivek D Koppikar

Art Unit

1733

-- Th MAILING DATE of this communication appears on the cover sheet with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 14-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 14-17 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-13, 14 and 18, drawn to a method of preparing a preform, classified in class 156, subclass 166.
 - II. Claims 15-17, drawn to an apparatus for applying a discontinuous pattern of a tackifier in the manufacture of a preform, classified in class 264, subclass 517.
2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus could be used, for example, to simply laminate layers of board or some other planar material.
3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Carmen Santamaria on April 17, 2002 a provisional election was made with traverse to prosecute the invention of I, claims 1-13, 14 and 18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 15-17 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

5. The disclosure is objected to because of the following informalities: On Page 9, Line 13, "spay" should be "spray". Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. The term "about" in claims 7 and 8, lines 19 and 21, respectively, is a relative term which renders the claim indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Appropriate correction is required.

8. The term "effective" in claim 10 is a relative term which renders the claim indefinite. The term "effective" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term effective is ambiguous as to the amount of tackifier resin that is forced into the fibers.

9. Claim 11 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the steps for preparing the tackified reinforced fibers for shipping.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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11. Claims 1, 4, 6, 8, 10, 14 and 18 rejected under 35 U.S.C. 102(b) as being anticipated by Lopez (US Patent Number 5,480,603).

With regard to Claim 1, Lopez (US Patent Number 5,480,603) is directed towards a method of applying a discontinuous coating to hold together reinforcement layers, for use in an RTM molding process. The discontinuous coating can be considered to be a random pattern.

With regard to Claim 4, Lopez shows that the tackifier resin is applied using a spray bottle (Lopez, Col. 7, Ln. 48-53).

With regard to Claim 6, Lopez teaches using the claimed tackifier resins in the preparation of the reinforced fibers (Lopez, Col. 2, Ln. 50-67).

With regard to Claim 8, Lopez recites the volume percentages of the tackifier resin (Lopez, Col. 4, Ln. 1-14).

With regard to Claim 10, Lopez states that the amount of tackifier applied to the substrate should be sufficient to hold the fibers in the desired shaped and position (Lopez, Col. 5, Ln. 5-11).

With regard to Claim 14, Lopez teaches that the purpose of the process is to prepare a preform for an RTM molding process (Lopez, Col. 2, Ln. 15-17).

With regard to Claim 18, Lopez and Alderfer show that a discontinuous, patterned layer of tackifier resin is applied to the fibers in a predetermined amount to form a tacky ply as mentioned in the rejection for claim 1.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1, 2, 3, 4, 6, 8-13, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lopez in view of Alderfer.

Lopez US Patent Number (5,480,603) is directed towards a method of applying a discontinuous coating to hold together reinforcement layers, for subsequent use in an RTM molding process. Alderfer (US Patent Number 2,207,279) is directed towards applying resin to hold warp strands in various shapes (Lopez, Col 1, Ln. 8-20, Col. 5, Ln. 5-11 and Alderfer Col. 3, Ln. 20-35).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have applied the resin in a patterned arrangement, as is taught by Alderfer, to the reinforcing fibers of Lopez in order to apply only a sufficient amount of resin as was needed so that the strands or fibers would stick together before molding.

With regard to Claim 2, Alderfer shows that the viscous material or resin is applied with a patterned roller (Alderfer, Col. 2, Ln. 17-55). Therefore at the time of the invention, one of ordinary skill in the art would have appreciated that the discontinuous tackifier film resin in Lopez could have been applied by a patterned roller in addition to a spray nozzle.

With regard to Claim 4, Lopez shows that the tackifier resin is applied using a spray bottle (Lopez, Col. 7, Ln. 48-53).

With regard to Claim 6, Lopez teaches using the claimed tackifier resins in the preparation of the reinforced fibers (Lopez, Col. 2, Ln. 50-67).

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With regard to Claim 8, Lopez recites the volume percentages of the tackifier resin (Lopez, Col. 4, Ln. 1-14).

With regard to Claim 9, Lopez and Alderfer does not recite using a herringbone pattern. However, it would have been obvious to use a particular pattern, such as a herringbone pattern, at the time of the invention, in order to apply the optimal amount of resin onto the fibers so that the fibers would hold together in a desired shape while still leaving pores in the preform such that liquid resin could impregnate the preform in the subsequent injection molding process. The exact type of pattern used would depend on the type of the reinforcement preform.

With regard to Claim 10, Lopez states that the amount of tackifier applied to the substrate should be sufficient to hold the fibers in the desired shaped and position (Lopez, Col. 5, Ln. 5-11).

With regard to Claims 11-13, one of ordinary skill in the art would have expected that once the preform was formed it would be processes and packed for shipping by cutting and stacking the fibers and wrapping them into rolls. Wrapping the fibers into rolls is a common method known in the art to provide an efficient way of transporting the tackified reinforcing fibers.

With regard to Claim 14, Lopez teaches that the purpose of the process is to prepare a preform for an RTM molding process (Lopez, Col. 2, Ln. 15-17).

With regard to Claim 18, Lopez and Alderfer show that a discontinuous, patterned layer of tackifier resin is applied to the fibers in a predetermined amount to form a tacky ply as mentioned in the rejection for claim 1.

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Lopez recites that the individual plies may be used in resin transfer molding which involves arranging plies in the shape of a preform, placing the plies in a mold, injecting liquid resin and curing the preform (Lopez, Col. 2, Ln. 15-17, Col. 5, Ln. 5-10 and Col. 6, Ln. 59-67).

15. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lopez and Alderfer and the Admitted Prior Art.

With regard to Claim 5, the types of reinforcing fibers recited are well known, as evidenced in the prior art acknowledged in the specification (Specification, Page 6, Lines 1-7). At the time of the invention, one of ordinary skill in the art would have used these types of fibers in order to provide make a strong and durable composite material.

With regard to Claim 7, Lopez does not expressively recite the claimed ranges for the areal weight of the tackifier resin. However, at the time of the invention, one of ordinary skill in the art would have appreciated that the areal weight percentages in the preform could have been varied.

16. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lopez and Alderfer in view of Colegrove.

Colegrove discloses applying the tackifier resin by a release sheet. At the time of the invention one of ordinary skill in the art would have used a release sheet so that the fibers would not be damaged.

Claim Rejections - 35 USC § 102

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

18. Claims 1, 2, 3, 10-12, 14 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Colegrove.

19. Colegrove (US Patent Number 6,096,669) is directed towards a method of applying patterned resin film to a layer of unidirectional fibers:

With regard to Claim 1, Colegrove discloses aligning fibers in order to form at least one layer (Colegrove, Col. 3, Ln. 62-65). Next a resin grid film on release paper is applied to one or both sides of the fibers (Colegrove, Figure 3). The resin, which is polymeric curable, is in the form of grid such that only a fraction of the surface area of the fibers contact the curable resin film grid (discontinuous layer) (Colegrove, Figures 1-3 and Col. 2, Ln. 50-67 and Col. 3, Ln. 41-58). PR500® may be used as a resin in combination with PT500® epoxy resin, which is a powered tackifier (Colegrove, Col. 3, Ln. 32-42).

With regard to Claim 2, Colegrove shows that the patterned discontinuous layer of tackifier resin is applied by a patterned roller (Colegrove, Col 2, Ln. 41-57).

With regard to Claim 3, the tackifier resin is applied by a release paper (Colegrove, Figure 2 and Col. 2, Ln. 47-53).

With regard to Claim 10, although Colegrove does not expressly recite that the tackifier resin is forced into the fibers one in the art would expect this to occur in order for the reinforcing fibers to be held together.

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With regard to Claims 11-12, Colegrove discloses wrapping the preform onto a take up roller (28) after it has been formed (Colegrove, Figure 4). One of ordinary skill would have expected that the final preform to be shipped or transported for subsequent use a composite structure.

With regard to Claim 14, Colegrove produces a preform using the process of Claim 1 of the instant invention (Colegrove, Abstract and Figure 5).

With regard to Claim 18, Colegrove discloses forming a layer of reinforcing fibers and applying a coating of tackifier curable-resin to at least one of the sides of the reinforcing fibers as noted above. Colegrove also goes on to say that after the tackifier resin is applied to the reinforcing fibers the individual plies may be shaped and the preform may then be molded. The preform is manufactured such that fibers have a resin content which is sufficient to hold the fibers in a desired shape but also small enough to leave the resulting preform porous so that it can be impregnated with matrix resin during subsequent molding processes (Colegrove, Col. 1, Ln. 39-47 and Col. 5, Ln. 49-59). One would expect this matrix resin to be in liquid form so it could penetrate through the pores of the preform.

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. Claims 7, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colegrove.

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With regard to Claim 7, Colegrove does not expressly recite the claimed ranges for the areal weight of the tackifier resin. However Colegrove suggests that varying several properties, such as reducing the viscosity of the resin and the temperature of the patterned rollers, contribute to obtaining a lower tackifier resin film weight (Colegrove, Col. 2, Ln. 54-67). Therefore at the time of the invention, one of ordinary skill in the art would have appreciated that as the viscosity of the resin used decreased its weight percent in the preform would also decrease to the interval in the claimed ranges. Moreover, one of ordinary skill in the art would appreciate that the choice of a particular resin would influence its particular weight percent of the total weight of the preform.

With regard to Claim 9, it is noted from above that Colegrove recites using various types of patterns which could include a herringbone pattern. It would have been obvious to use a particular pattern, such as a herringbone pattern, at the time of the invention, in order to apply the optimal amount of resin onto the fibers so that the fibers would hold together in a desired shape while still leaving pores in the preform such that liquid resin could impregnate the preform in the subsequent injection molding process. The exact type of pattern used would depend on the type of the fibers that were employed.

With regard to Claim 13, one of ordinary skill in the art would have appreciated that after the preform was manufactured it would have to be cut and stacked so that it could be packed into shipping containers of various sizes to be transported.

22. Claims 4-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colegrove in view of Lopez and Alderfer.

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With regard the Claim 4, as noted above Lopez shows applying a discontinuous layer of tackifier resin using a spray nozzle and Alderfer discloses applying a resin in a patterned arrangement, wherein the resin is applied not as a film. At the time of the invention, it would have been obvious to one of ordinary skill in the art that the patterned resin used in Colegrove could have alternatively been applied using a spray nozzle as is shown by Lopez in view of Alderfer (Lopez, Col. 7, Ln. 48-53, Alderfer, Col.2, Ln. 17-55).

With regard to Claim 5, the types of reinforcing fibers recited are well known, as evidenced in the prior art acknowledged in the specification. At the time of the invention, one of ordinary skill in the art would have used these types of fibers in order to provide make a strong and durable composite material (Specification, Page 6, Lines 1-7).

With regard to Claim 6, the types of tackifier resins recited are well known, as evidenced in Lopez and in the prior art acknowledged in the specification. At the time of the invention one of ordinary skill in the art would have used these resins because of their strong tackifier and curing properties so that they would harden by the time the individual plies were placed in the mold for the RTM process (Lopez, Col. 2, Ln. 61-65 and Specification (Instant Application), Page 7, Lines 17-18).

With regard to Claim 8, Lopez recites the volume percentages of the tackifier resin (Lopez, Col. 4, Ln. 1-14).

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Conclusion


23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Vivek Koppikar** whose telephone number is **(703) 305-6618**. The examiner can normally be reached on Monday-Friday from 8 AM to 5 PM, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael W. Ball, can be reached at (703) 308-205. The fax phone numbers for the organization where this application or proceeding are assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Vivek Koppikar

5/2/02


Michael W. Ball
Primary Examiner
Art Unit 1733